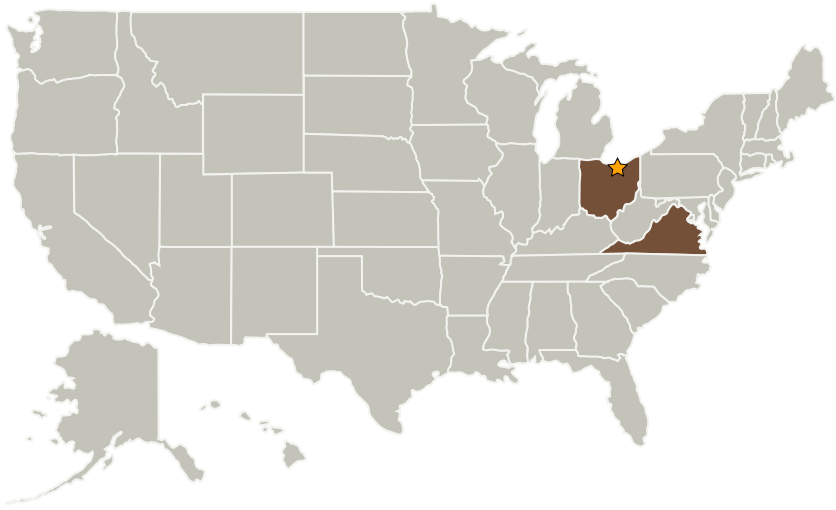
Nanostructured electrodes for Solar Power Generation, Phase I

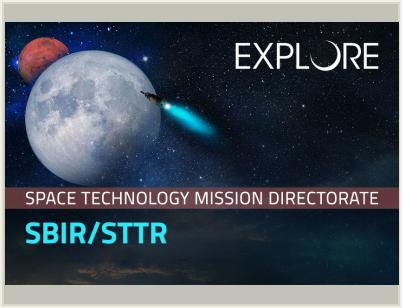
Completed Technology Project (2004 - 2004)

Project Introduction

The key to achieving high-power solar arrays for NASA applications is the development of high-efficiency, thin-film solar cells that can be fabricated directly on flexible, lightweight, polymer/plastic substrates. Current thin-film cell fabrication approaches are limited by either the ultimate efficiency that can be achieved with the device material and structure or the requirement for high-temperature deposition processes, especially of the transparent conducting electrode, which are incompatible with all presently known flexible polyimide or other polymer substrate materials. In this proposed R&D effort Materials Modification, Inc. will develop a novel, low-temperature and cost-effective technique for the preparation of nanostructured thin films of a transparent conducting oxide, for use as electrodes in Plastic solar cells.. In addition, a prototype plastic Heterojunction solar cell will be fabricated with this nanostructured material as an electrode instead of the conventional ITO, and the superiority of this system will be established

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Materials Modification, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Fairfax, Virginia

Primary U.S. Work Locations	
Ohio	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

T S Sudarshan

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic